

REMARKS/ARGUMENT**Regarding the Claims in General:**

Claims 1-18 remain pending. Claims 1, 2, 10, and 14 have been amended to better highlight distinguishing features of the invention, and to improve the form thereof.

Regarding the Previously Allowable Subject Matter

Applicants note withdrawal of the indication of allowability as to claims 9, 12, 13, and 17.

Regarding the Prior Art Rejections:

In the outstanding Office Action, claims 1-18 were rejected as anticipated by Ano U.S. Patent 6,815,836 (Ano), and claims 10, 11, and 14-16 were rejected as anticipated by Takahashi U. S. Published Patent Application 2003/0166333 (Takahashi), or by Lim U. S. Published Patent Application 2004/0080056 (Lim). Applicants respectfully traverse these rejections.

The three new references cited by the Examiner do relate to wire bonding, but, like those previously cited, they do not disclose, teach or suggest the present invention. With respect to Ano, claim 1 recites the following steps:

forming a first bond at the first bonding point with the bonding tool;

moving the bonding tool away from the first bond by a first distance;

moving the bonding tool towards the first bonding point and coupling the wire to the first bond . . .

In other words, an initial bond is formed at a first location, then the bonding tool is moved to a second position, thereby extending a length of wire, then bonding tool applies ultrasonic energy to while it returns toward the first bonding point so the wire flexes or bends and is brought back into contact with itself at the first bonding point. There is no requirement that the wire be fixed, i.e., bonded, to the first bonding point a second time.

Ano does not do this. In Ano, it is clear from the description and drawings that the method therein does not involve creating loop 306 by bonding the wire to the ball bond, but instead, by "bonding the wire 405 to itself near the ball" (col. 5, lines 30-33). Thus, the second point of contact (at which a second bond is made) is displaced from the original bond.

This teaching is consistent throughout the specification and drawings, including claim 1 (col. 6, lines 50-54) and Fig. 3. Thus, this feature of claim 1 is not anticipated by Ano.

Claim 1 further recites:

[after coupling the wire to the first bonding point], moving the bonding tool away from the first bond by a second distance;

forming a kink in the wire. . .

Preliminarily, it is noted that the intent and reasonable meaning of original claim 1 was that the kink in the wire is to be formed after the second bond at the first bonding point. To avoid any possible misconstruction, claim 1 has been amended to state this order of the steps explicitly. Claim 1 now recites explicitly what was already at least implicit in the claim as previously presented, and has therefore not been narrowed for statutory purposes related to patentability.

With the foregoing in mind, it should be clear that the above-recited steps are also not disclosed, taught or suggested in Ano. From the Office Action, it is impossible to be sure what part of the structure shown in the patent is regarded by the Examiner as being the recited kink, especially since the term is not used anywhere in the patent. Moreover, if the word "kink" is given its normal meaning of a sharp bend or curl, or the like, there is nothing which meets that definition which is formed after loop 206 (or 306 or 409) has been formed, and after "moving the bonding tool away from the first bond by a second distance".

In particular, in Ano, the loop 409 is formed before bonding the wire to the first bond. After bonding the wire to itself, the capillary 401 continues to move approximately parallel to the chip surface and the wire is attached to another contact pad (without forming a kink) (see col. 5, lines 30-42).

The same is true in Ano's other embodiments.

Claims 2-9, which are directly or indirectly dependent on claim 1, are also not anticipated by Ano for the reasons stated above. In addition, these claims recite features which, in combination with the features of their respective parent claims are neither taught nor suggested in this reference.

For example, claim 2, which has been amended to recite explicitly that the bonding tool remains substantially vertically above the first bonding point until the second bond at the first bonding point has been made, specifies that:

the step of moving the bonding tool away from the first bond by the first distance includes the steps of moving the bonding tool substantially vertically upwards and thereafter moving the bonding tool towards the second bonding point while keeping the bonding tool substantially vertically over the first bond.

In Ano, the bonding tool is looped horizontally *away* from the first bond point after the first bond is made.

Independent claim 10, which has been amended to explicitly recite features previously recited inferentially, is also not anticipated by Ano. This claim is directed to a wire loop having:

a ball-bonded base portion;

a neck portion integrated with a top of the base portion constructed of an extension of the wire from the base portion which has the extended end thereof bonded to the base portion; and

an extension of the wire running from the neck portion substantially transversely to an axis that is substantially normal to a bonding surface of the wire bond at substantially the same height as the top of the base portion in a direction toward another wire bond.

In Ano, the loop (e.g., 306), assuming it can properly be regarded as a neck portion, is not constructed of an extension of the wire from the base portion which has the extended end thereof bonded to the base portion. Further, the wire bond extending from the neck portion in Ano does not extend *toward another wire bond* at substantially the same height as the top of the base portion. In Ano, the wire extends from the neck portion in a direction away from the other wire bond, then loops back to extend in the direction of the other wire bond. Additional wire to form the loop 409 is not required.

Claim 14, as amended, calls for "a curved portion integrated with and extending around at least a part of a side of the base portion". The loops shown in Ano do not satisfy this limitation. Loop 409 twists away from the side of the base portion and then twists again towards the base portion.

Claims 11-13 are dependent on claim 10, and claims 15-18 are dependent on claim 14, and are patentable over Ano for the reasons stated above.

Claims 10, 11, 14, and 16 are also not anticipated by Takahashi or Lim.

Takahashi (paragraphs [0184] - [0185]) and Lim (paragraph [0028]) both teach stitch bonds that are bonded onto ball bonds. Such bonds are not "constructed by extending a wire from the base portion after formation of the base portion" as claimed, but by forming a ball bond and then stitching a wire onto it.

Furthermore, in respect to claim 14, neither Takahashi nor Lim teach "a *curved portion* integrated with and extending around at least a part of a side of the base portion." The Examiner does not indicate where this "curved portion" is found in these references. Moreover, similar to the above explanation relating to claim 10 above, these references simply teach stitching a wire onto a ball bond. They do not teach twisting the wire around the side of the base portion at all.

Claims 11 and 16 are respectively dependent on claims 10 and 14, and are patentable over Takahashi or Lim for the same reasons.

In view of the foregoing, favorable reconsideration and allowance of this application are respectfully solicited.

I hereby certify that this correspondence is being transmitted by Facsimile to (571) 273-8300 addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

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Respectfully submitted,

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